



**ODISHA UNIVERSITY OF HEALTH SCIENCES,  
BHUBANESWAR**



**PG Curriculum  
DM Gastroenterology**

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# Curriculum

## DM Gastroenterology

The infrastructure and faculty of the department of gastroenterology will be as per MCI guidelines

### 1. Goals

The goal of DM course is to produce a competent Gastroenterologist who:

- ❖ Recognizes the health needs of adults and carries out professional obligations in keeping with principles of National Health Policy and professional ethics;
- ❖ Has acquired the competencies pertaining to gastroenterology that are required to be practiced in the community and at all levels of health care system;
- ❖ Has acquired skills in effectively communicating with the patients, family and the community;
- ❖ Is aware of the contemporary advances and developments in medical sciences.
- ❖ Acquires a spirit of scientific enquiry and is oriented to principles of research methodology; and
- ❖ Has acquired skills in educating medical and paramedical professionals.

### 2. Objectives

At the end of the DM course in Gastroenterology, the student should be able to:

- ❖ Recognize the key importance of medical problems in the context of the health priority of the country;
- ❖ Practice the specialty of gastroenterology in keeping with the principles of professional ethics;
- ❖ Identify social, economic, environmental, biological and emotional determinants of adult gastroenterology diseases and know the therapeutic, rehabilitative, preventive and promotion measures to provide holistic care to all patients;
- ❖ Take detailed history, perform full physical examination and make a clinical diagnosis;
- ❖ Perform and interpret relevant investigations (Imaging and Laboratory);
- ❖ Perform and interpret important diagnostic procedures;
- ❖ Diagnose gastroenterological illnesses in adults based on the analysis of history, physical examination and investigative work up;
- ❖ Plan and deliver comprehensive treatment for illness in adults using principles of rational drug therapy;
- ❖ Plan and advise measures for the prevention of gastroenterological diseases;
- ❖ Plan rehabilitation of adults suffering from chronic illness, and those with special needs;
- ❖ Manage gastroenterological emergencies efficiently;
- ❖ Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation;
- ❖ Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities;
- ❖ Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities.
- ❖ Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine;
- ❖ Demonstrate competence in basic concepts of research methodology and epidemiology;
- ❖ Facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer;
- ❖ Play the assigned role in the implementation of national health programs, effectively and responsibly;

- ❖ Organize and supervise the desired managerial and leadership skills;
- ❖ Function as a productive member of a team engaged in health care, research and education.

### 3. Syllabus

#### 3.1 Theory

The syllabus should include the cardinal manifestations, definition, epidemiology, etiopathogenesis, genetics, clinical presentation, complications, differential diagnosis, investigations, treatment and prevention and prognosis of all gastroenterological diseases. In addition the candidate should be well versed with all the common and important pediatric gastroenterological diseases. It should also cover the recent advances that have occurred in the field of gastroenterology.

- ❖ Biology of the gastrointestinal tract and liver
  - Gastrointestinal Hormones and Neurotransmitters  
Cellular Communication, Neural Regulation of the Gastrointestinal Tract, Peptide Hormones of the Gastrointestinal Tract, Other Chemical Messengers of the Gastrointestinal tract, Signal Transduction, Regulation of Gastrointestinal Growth by Hormones and Transmitters, Regulation of Gastrointestinal Hormones by Intraluminal Releasing Factors, Gastrointestinal Peptide That regulate Satiety and Hunger, Entero-insular Axis
  - Mucosal Immunology and Mechanisms of Gastrointestinal Inflammation  
Mucosal Immune Responses, Inflammatory Responses
  - Cellular Growth and Neoplasia  
Mechanisms of Normal Cell Homeostasis, Tumor Development: Multistep Formation and Clonal Expansion, Neoplasia – Associated Genes, Oncogenic Signaling Pathways, Environmental Mutagenesis, Biological Features of Tumor Metastasis, Summary of Molecular Mechanisms of Gastrointestinal Cancers, Molecular Medicine: Current and Future Approaches in Gastrointestinal Oncology
- ❖ Approach to patients with symptoms and signs
  - Acute Abdominal Pain  
Anatomic Basis of Pain, Stimulants of Pain, Types of Pain, An Approach to the Patient with Acute Abdominal Pain, Pharmacologic Management of the Acute Abdomen
  - Chronic Abdominal Pain  
Definition and Classification of Functional Abdominal Pain Syndrome, Epidemiology and Impact on Health care Systems, Pathophysiology, Clinical features, Diagnosis and Differential Diagnosis Treatment
  - Symptoms of Esophageal Disease  
Dysphagia, Odynophagia, Globus Sensation, Hiccups, Chest Pain of Esophageal Origin, Heartburn and Regurgitation, Extraesophageal Symptoms of Gastroesophageal Reflux Disease
  - Dyspepsia  
Definition, Epidemiology, Cause of Organic dyspepsia, Functional (Nonulcer) Dyspepsia, Approach to Uninvestigated Dyspepsia, Treatment of Functional Dyspepsia
  - Nausea and Vomiting  
Pathophysiology, Clinical Characteristics of Vomiting, Causes, Diagnostic Evaluation, Complications, Treatment
  - Diarrhea  
Definition, Pathophysiology, Clinical Classification, Differential Diagnosis, Evaluation of the Patient with Diarrhea Treatment, Selected Diarrheal Syndromes
  - Intestinal Gas  
Volume and Composition of Intestinal Gas, Sources of intestinal Gas, Propulsion of Gas Through the Intestinal Tract, Clinical Gas Problems

- Fecal Incontinence  
Prevalence, Mechanisms of Continence and Fecal Incontinence, Differential Diagnosis Fecal Incontinence, Evaluation of the Patient with fecal Incontinence, Treatment, Management of Specific Situations
  - Constipation: Definition and Presenting Symptoms, Epidemiology, Risk Factors, Classification of Constipation, Colonic Anatomy and function, Pathophysiology of Constipation, Disorders of the Anorectum and Pelvic Floor, Constipation with Systemic Disorders, Constipation with Nervous System Disease, Constipation Secondary to Structural Disorders of the Colon, Rectum, Anus, and Pelvic Floor, Medications Associated with Constipation, Psychological Disorders as Causes of or Aggravating Factor in Constipation, Clinical Assessment, Diagnostic Tests, Medical Treatment
  - Gastrointestinal Bleeding: Clinical Manifestations, Acute Upper Gastrointestinal Bleeding, Acute Lower Gastrointestinal Bleeding, Occult and Obscure Bleeding
  - Jaundice : Determinants of Serum Bilirubin Concentration, Differential Diagnostic of Jaundice, Diagnostic Approach to the Patient with Jaundice, Therapeutic Options
- ❖ Nutrition
- Nutritional Assessment and Management of the Malnourished Patient  
Basic Nutritional Concepts, Micronutrients, Starvation, Malnutrition, When Is Aggressive Nutritional Support Indicated for the Hospitalized Patient?, Refeeding Syndrome, Management of Severe Malabsorption: A Nutritional Perspective
  - Nutrition in Gastrointestinal Disease  
Nutritional Assessment, Nutrients, Nutrition in Specific Disease States, Nutrition Therapy
  - Eating Disorders  
Epidemiology, Etiology and Course, Diagnosis and Evaluation, Gastrointestinal Abnormalities Associated with Eating Disorders, Management of Eating Disorders in the Adult, Medical Management of Gastrointestinal Symptoms of Patient with Eating Disorders
  - Obesity Definition and prevalence Etiology, Gastrointestinal Complications, Non-Gastrointestinal Complications, Treatment
  - Food Allergies Background, Definitions, and Prevalence, Pathogenesis, Clinical Features, Diagnosis, Therapy and Natural History
- ❖ Esophagus
- Anatomy, Histology, Embryology, and Developmental Anomalies of the Esophagus, Anatomy and Histology, Embryology, Development Anomalies
  - Esophageal Motor and Sensory Function and Motor Disorders of the Esophagus Motor and Sensory Innervation, Coordinated Esophageal Motor Activity, Pathogenesis and Categorization of Motor Disorders, Diagnosis, Disorder of the UES and Cervical Esophageal Region, Achalasia, Other Hypermotility Disorders of the Distal Esophagus and LES (Spastic Disorders), Esophageal Hypomotility Disorders
  - Gastroesophageal Reflux Diseases and Its Complications  
Epidemiology, Health Care Impact, Pathogenesis, Clinical Features, Differential Diagnosis, Associated Conditions, Diagnosis, Clinical Course, Complications, Treatment of uncomplicated disease, Treatment of complications
  - Esophageal Disorders Caused by Medications, Trauma, and infection Medication-Induced Esophageal Injury, Esophageal Injury from Nasogastric and other Nonendoscopic Tubes, Esophageal Injury from Penetrating or Blunt Trauma, Esophageal Infections in the Immunocompetent Host
  - Tumors of the Esophagus  
Malignant Epithelial Tumors, Other Malignant Epithelial Tumors, Benign Epithelial Tumors, Malignant Nonepithelial Tumors, Benign Nonepithelial Tumors

- ❖ Stomach and duodenum
  - Anatomy, Histology, Embryology, and Developmental Anomalies of the Stomach and Duodenum  
Anatomy of the Stomach, Anatomy of the Duodenum, Congenital Anomalies of the Stomach and Duodenum
  - Gastric Motor and Sensory Function and Motor Disorders of the Stomach  
Gastric Motor and Sensory Physiology, Clinical Assessment of Gastric Motor and Sensory Function and Dysfunction, Gastric Motor Disorders, Treatment
  - Gastric Secretion  
Physiology, Quantitative Aspect of Acid Secretion in Humans, Mucus/Bicarbonate Secretion, Secretion of Other Electrolytes (K<sup>+</sup>, Na<sup>+</sup>, Cl<sup>-</sup>), Pepsinogens and other Gastric Aspartic proteases, Human Gastric lipase, Intrinsic factor, Gastric Secretion in Disease, Gastric Antisecretory drugs
  - Helicobacter pylori  
Epidemiology, Virulence Factors, Acute Infection, Chronic Infection, Diagnosis, Treatment, Immunization (Prevention)
  - Gastric and Gastropathies  
Classification, Chronic, Nonspecific Gastritides, Infection Gastritides, Granulomatous Gastritides, Distinctive Gastritides, Miscellaneous forms of Gastritis, Reactive Gastropathies (Acute Erosive Gastritis), Hyperplastic Gastropathies, Differential Diagnosis of Gastritis and Gastropathy, Treatment and Prevention of Gastritis and Gastropathy
  - Peptic Ulcer Disease  
Pathophysiology of Peptic Ulceration, Epidemiology, Clinical Features of Uncomplicated Peptic Ulcer Disease, Diagnostic Tests, Complication of Peptic Ulcer Disease, Cameron Ulcers (Linear Gastric Erosions in Hiatal Hernias)
  - Treatment of Peptic Ulcer Disease  
History, Antisecretory and Acid-Neutralizing Agents, Ulcers Associated with Helicobacter pylori infection, Peptic Ulcer Associated with Nonsteroidal Anti-inflammatory Drugs, Refractory Peptic Ulcers, Stress-Related Mucosal Injury, Treatment of Complications of Peptic Ulcer Disease
  - Tumors of the Stomach  
Adenocarcinoma, Gastric Lymphoma, Gastric Carcinoid Tumors, Gastrointestinal Stromal Tumors, Miscellaneous Tumors
  
- ❖ Pancreas
  - Anatomy, Histology, Embryology, and Developmental Anomalies of the Pancreas  
Anatomy, Histology and Ultrastructure, Embryology, Signaling and Growth Factors, Developmental Anomalies
  - Pancreatic Secretion  
Functional Anatomy, Composition of Exocrine Secretions, Functions of the major Digestive Enzymes, Digestive Enzyme synthesis and Transport, Cellular regulation of Enzyme Secretion, Organ Physiology, Pancreatic secretory Function tests
  - Hereditary, Familial, and Genetic Disorders of the Pancreas and Pancreatic Disorders in Childhood  
Definitions and Terminology, Models of Pancreatitis as a Complex Disorder, Major Gene Mutations Causing Pancreatic Disease, Modifier Genes in Pancreatic Disease, Pancreatic Disorders in Childhood, Genetic Disorders Affecting Pancreas in Childhood, Rare Syndromes, Familial Metabolic Syndromes Associated with Recurrent Acute and Chronic Pancreatitis
  - Acute Pancreatitis  
Epidemiology, Definitions, Natural History, Pathology, Pathogenesis, Pathophysiology, Predisposing Conditions, Clinical Features, Laboratory, Diagnosis, Radiologic Diagnosis, Differential Diagnosis, Predictors of Severity, Treatment, Complications

- Chronic Pancreatitis  
Definition, Epidemiology, Pathology, Pathophysiology, Etiology, Clinical features, Physical Examination, Diagnosis, Treatment, Complications
- Pancreatic Cancer, Cystic Pancreatic Neoplasms, and Other Nonendocrine Pancreatic Tumors  
Pancreatic cancer, Cystic tumors of the Pancreas, Other Nonendocrine, Pancreatic Tumors
  
- ❖ Biliary tract
  - Anatomy, Histology, Embryology, Developmental Anomalies, and Pediatric Disorders of the Biliary Tract
  - Development of the Liver and Biliary Tract, Anatomy of the Biliary Tract and Gallbladder, Congenital Anomalies of the Gallbladder, Overview of Disorders of the Biliary Tract in Children, Pediatric Disorders of the Bile Ducts, Pediatric Disorders of the Gallbladder
  - Biliary Tract Motor Function and Dysfunction  
Anatomy and Physiology, Gallbladder Dyskinesia, Sphincter of Oddi Dysfunction, Sphincter of Oddi Dysfunction in Pancreatitis, Failure of Response to Biliary Sphincterotomy in Sphincter of Oddi Dysfunction
  - Bile Secretion and the Enterohepatic Circulation  
Bile Acid Synthesis and Metabolism, The Enterohepatic Circulation, Hepatic Bile Acid Transport and Bile Secretion, Intestinal and Renal Bile Acid Transport, Disorders of the Enterohepatic Circulation, Bile Acid Therapy, Sequestrants, and Transport Inhibitors
  - Gallstone Disease  
Epidemiology, Composition, Risk Factors, Pathogenesis, and Natural History of Gallstones, Clinical features, Uncommon Complications,
  - Treatment of Gallstone Disease  
Medical Treatment, Surgical Treatment, Choice of Treatment, Indications for Treatment, Treatment of Choledocholithiasis, Bile duct Stricture, Postcholecystectomy Syndrome, Gallstones, Cholecystectomy, and Cancer
  - Acalculous Cholecystitis, Cholesterosis, Adenomyomatosis, and Polyps of the Gallbladder  
Acalculous Biliary Pain, Acute Acalculous Cholecystitis, Cholesterosis of the Gallbladder, Adenomyomatosis of the Gallbladder, Polyps of the Gallbladder
  - Sclerosing Cholangitis and Recurrent pyogenic Cholangitis  
Primary Sclerosing Cholangitis, Recurrent Pyogenic Cholangitis
  - Tumors of the Gallbladder, Bile Ducts, and Ampulla  
Gallbladder Tumors, Tumors of the Extrahepatic Biliary Tree, Tumors of the Ampulla of Vater
  - Endoscopic and Radiologic Treatment of Biliary Disease  
General Principles, Procedural Techniques, Treatment of Specific Conditions
  
- ❖ Liver
  - Anatomy, histology, Embryology, and Developmental Anomalies of the liver  
Surface Anatomy, Segmental Anatomy, Large Vessels of the liver, Lymph Vessels, Nerve Supply, Biliary System, Microanatomy
  - Liver Physiology and Energy Metabolism  
Liver Cell types and Organization, Integration of the Functions of the Different Cell Types, Regeneration and Apoptosis of Liver Cells, Protein Synthesis and Degradation in the Liver Cells, Hepatic Nutrient Metabolism
  - Liver Chemistry and Function tests  
Biochemical Markers of Hepatic Injury, Patterns and Severity of Hepatic Injury, Predictors of Hepatic Injury, Additional Tests
  - Hemochromatosis

Causes of Iron Overload, Pathophysiology, Clinical Features, Diagnosis, Treatment and Prognosis, Family Screening

- Wilson Disease  
The Copper Pathway, The Basic Molecular defect, Clinical Features, Pathology, Diagnosis, Treatment, Prognosis
- Other Inherited Metabolic Disorders of the Liver
- Clinical Features of Metabolic Liver Disease,  $\alpha$ 1-Antitrypsin deficiency, Glycogen Storage Diseases, Congenital Disorders of Glycosylation, Porphyrrias, Tyrosinemias, Urea Cycle Defects, Bile Acid Synthesis and Transport defects, Cystic Fibrosis, Mitochondrial Liver Diseases
- Hepatitis A  
Virology, Epidemiology, Pathogenesis, Clinical Features, Diagnosis, Prevention and Treatment
- Hepatitis B and D  
Virology, Epidemiology, Pathogenesis, Clinical Features, Diagnosis, Prevention and Treatment
- Hepatitis C  
Virology, Epidemiology, Pathogenesis, Clinical Feature, Diagnosis, Histopathologic Finding and Role of Liver Biopsy, Natural History, Prevention, Treatment
- Hepatitis E  
Virology, Epidemiology, Pathogenesis, Clinical Features, Diagnosis, Treatment and Prevention
- Hepatitis caused by Other Viruses  
Hepatitis G and GB Agent Infection, TT Virus Infection, Sanban, Yonban, and SEN Viruses and TTV-Like Mini-Virus Infections, Systemic Viral Infections That May Involve the Liver
- Bacterial, Parasitic, and Fungal Infections of the Liver, Including Liver Abscess  
Bacterial Infections Involving or Affecting the Liver, Parasitic Infections, Fungal Infections, Liver Abscess
- Vascular Diseases of the Liver  
Budd-Chiari Syndrome, Sinusoidal Obstruction Syndrome (Veno-occlusive Disease), Portal Vein Thrombosis, Ischemic hepatitis, Congestive hepatopathy, Peliosis hepatitis, Hepatic Artery Aneurysm, Atherosclerosis
- Alcoholic liver Disease  
Epidemiology, Spectrum of Disease, Diagnosis of Alcohol Abuse, Diagnosis of Alcoholic Liver Disease, Clinical Challenges, Confounders that may influence progression of Alcoholic Liver Disease, Pathogenesis, Prognosis, Treatment
- Nonalcoholic Fatty Liver Disease  
Nonalcoholic Fatty Liver and Steatohepatitis, Focal Fatty Liver, Liver Disease Caused by Drugs, Definitions and Importance, Epidemiology, Pathophysiology, Clinicopathologic Features of Drug-induced liver Disease, A Practical and management, Dose-Dependent Hepatotoxicity, Drug-Induced, Acute hepatitis, Drug-induced Granulomatous Hepatitis, Drug-Induced Chronic hepatitis, Drug-Induced Acute Cholestasis, Drug-Induced Chronic Cholestasis, Drug-Induced Steatohepatitis, Hepatic Fibrosis, and Cirrhosis, Drug-Induced Vascular Toxicity
- Liver Disease Caused by Anesthetics, Toxins, and Herbal Preparations  
Anesthetic Agents, Chemicals, Metals, Adulterated cooking Oils and Contaminated Foods, Drugs of Abuse, Botanical and Environmental Hepatotoxins, Vitamins and Herbal Preparations
- Autoimmune Hepatitis  
Diagnosis Criteria, Pathogenesis, Classification, Variant Forms, Autoimmune Hepatitis and Chronic hepatitis C, Epidemiology, Prognostic Indices, Clinical features, Treatment, Liver Transplantation, Future Directions
- Primary Biliary Cirrhosis  
Epidemiology, Pathogenesis, Clinical Features, Diagnosis, Natural History, Treatment, Complication of Chronic Cholestasis, Liver Transplantation, Autoimmune Cholangitis (AMA-Negative Primary Biliary Cirrhosis).



- Portal Hypertension and Gastrointestinal Bleeding  
Normal Portal Circulation, Hemodynamic Principles of portal Hypertension, Measurement of Portal Hypertension, Detection of varices, Cause of portal Hypertension, Clinical Assessment of patients with portal hypertension-related bleeding, Treatment of portal hypertension-related Bleeding, Management of Specific lesions
- Ascites and Spontaneous Bacterial peritonitis  
Pathogenesis of Ascites, Clinical Features, Diagnosis, Differential Diagnosis, Complications, Treatment of Ascites, Prognosis
- Hepatic Encephalopathy, Hepatopulmonary Syndromes, Hepatorenal Syndrome, and Other Complications of Liver Disease  
Hepatic Encephalopathy, Hepatopulmonary Syndromes, Hepatorenal Syndrome, Endocrine Dysfunction, Coagulation Disorders
- Acute Liver Failure  
Definition, Etiology, Clinical Features, Predictors of Outcome, Treatment, Liver Transplantation, Investigational Approaches
- Hepatic Tumors and Cysts  
Hepatic Tumors, Tumor-Like Hepatic Lesions, Hepatic Cysts, Approach to the Patient with a Hepatic Mass Lesion
- Liver Transplantation  
Indications, Listing Criteria and Policies of the United Network for Organ Sharing, Absolute and Relative Contraindications, Transplantation Evaluation and Listing, Disease-Specific Indications, Surgical Aspects of Liver Transplantation, Immunosuppression, Postoperative Course, Long-Term management
- ❖ Small and large intestine
- Anatomy, Histology, Embryology, and Development Anomalies of the Small and Large Intestine
- Anatomy, Embryology, Abnormalities in Normal embryologic Development
- Small Intestinal Motor and Sensory Function and Dysfunction
- Anatomy, Structural Elements and Their Role in Small intestinal motor and Sensory Function, Integrative Control of Motility, Mechanisms underlying Abnormal Motor and Sensory Function, Evaluation of Small Intestinal Motility, Clinical Measurement of Small Intestinal Motility, Normal Small Intestinal Motility, Clinical Consequences of Disordered Small Intestinal Motor Function, Approach to Patients with Possible Small Intestinal Motor Dysfunction
- Colonic Motor and Sensory function and Dysfunction
- Anatomy and Basic Control Mechanisms, Innervation of the Colon, Relationships among cellular Events, Pressure, and Flow, Regulation of Colonic Filling, Transport, and defecation, Anorectal motility, Modulators of Colonic Motility, Disorders of Colonic Motility
- Intestinal Water and Electrolyte Transport
- Features of the Intestinal Mucosa Essential for Water and Electrolyte Transport, Mucosal Components Involved in the Regulation and Modulation of intestinal Water and Electrolyte transport, Neurohumoral regulation of Intestinal Secretion and Absorption, Mucosal water and Electrolyte transport Processes, Changes in water and electrolyte transport in disease.
- Digestion and Absorption of Nutrients and vitamins
- Digestion and Absorption of Nutrients: An Overview, Fat, Carbohydrate, Protein, Vitamins, Minerals, Trace Elements, Adaptation to Changes in need or Load, The Neonatal Intestine, Diet-Gene Interactions, Bariatric Surgery: Effect on Digestion and Absorption
- Etiology and Pathophysiology
- Etiology and Pathophysiology, Clinical Features and Evaluation, Anatomic Investigations, Noninvasive Evaluation of Gastrointestinal Absorptive and Digestive Function, Malabsorption in Specific Disease States, General Approach to the Management of Malabsorption

- Enteric Bacterial Flora and Bacterial Overgrowth
- Composition and Molecular Analysis of the Enteric Flora, Host-Flora Interaction, Metabolic Activity of the Flora, Small Intestinal Bacterial Overgrowth
- Short Bowel Syndrome
- Etiology, Incidence and Prevalence, Pathophysiology, Medical Management, Complications, Surgical Management, Pharmacologic Enhancement of Bowel Adaptation, Survival and Quality of Life
- Celiac Sprue and Refractory Sprue
- Definitions, History, Epidemiology, Pathology, Clinical Feature, Diagnostic Studies, Differential Diagnosis, Disease Associated with Celiac Sprue, Treatment, Complications, Refractory Sprue, Prognosis, Future Therapies
- Tropical Malabsorption and Tropical Diarrhea
- Specific Causes of Tropical Malabsorption, Nonspecific Tropical Malabsorption
- Whipple's Disease
- History, Epidemiology, Microbiology, Genomics, Pathogenesis and Immunology, Clinical Features, Pathology, Diagnosis, Differential Diagnosis, Treatment and Prognosis, Future Prospects
- Infectious Enteritis and Proctocolitis and Bacterial Food Poisoning
- Susceptibility to Intestinal Infection, Classification of Bacterial Diarrhea, Diagnosis of Infectious Diarrheal Disease, Toxigenic Pathogens, Invasive Pathogens, Viral Pathogens, Special Situations, Dysentery versus Ulcerative Colitis, Treatment of Tuberculosis of Gastrointestinal Tract, Bacterial Food Poisoning, Fish Poisoning
- Antibiotic-Associated Diarrhea, Pseudomembranous Enterocolitis, Clostridium difficile-Associated Diarrhea and Colitis, Antibiotic-Associated Diarrhea, Pseudomembranous Enterocolitis, Clostridium difficile-Associated Diarrhea and Colitis
- Intestinal Protozoa
- Entamoeba Histolytica, Other Intestinal Amebae, Giardia Lamblia, Dientamoeba fragilis, Blastocystis hominis, Cryptosporidium Species, Cyclospora cayetanensis, Isospora belli, Microsporidia, Trypanosoma cruzi (American Trypanosomiasis or Chagas Disease)
- Intestinal Worms
- Nematodes, Cestodes, Trematodes
- Crohn's Disease
- History, Epidemiology, Etiology and Pathogenesis, Pathology, Clinical Features, Differential Diagnosis, Establishing the Diagnosis and Evaluation of Disease, Treatment, Crohn's Disease in the life Cycle, Prognosis
- Ulcerative Colitis
- Epidemiology, Etiology and Pathogenesis, Pathology, Clinical Features, Natural History and Prognosis, Diagnosis, Assessment of Disease Activity, Medical Therapy, Surgical Therapy, Management of Specific Complications, Extraintestinal Manifestations
- Ileostomy, Colostomy, and Pouches
- Pathophysiologic Consequences of Proctocolectomy, Clinical Consequences of Proctocolectomy, Complications and Management of the Conventional Brooke Ileostomy, Continent Ileostomy, Ileal Pouch-Anal Anastomosis, Abdominal Colectomy and ileorectal Anastomosis, Colostomy in the Management of Inflammatory Bowel Disease, Summary of Risk-Benefit Analysis
- Intestinal Ischemia
- Anatomy of the Splanchnic circulation, Pathophysiology and Pathology, Acute Mesenteric Ischemia, Mesenteric Venous Thrombosis, Focal Segmental Ischemia of the Small Intestine, Colon Ischemia, Chronic Mesenteric Ischemia, Vasculitis and Angiopathy of the Splanchnic Circulation
- Ulcers of the Small and Large Intestine Isolated  
Ulcers, Diffuse Ulcerations

- Appendicitis
- Historical Notes, Epidemiology, Anatomy and Embryology, Pathology, Pathogenesis, Diagnosis, Complications, Treatment, Treatment Outcomes,
- ❖ Miscellaneous Topics
  - Diverticular Disease of the Colon  
Epidemiology, Pathologic Anatomy, Etiology and Pathogenesis, Uncomplicated Diverticulosis, Diverticular Hemorrhage
  - Irritable Bowel Syndrome  
Definitions, Clinical Features, Epidemiology, Pathophysiology, Diagnosis, Management, Prognosis
  - Intestinal obstruction and Ileus  
Small Intestinal Obstruction, Colonic Obstruction Ileus
  - Acute and Chronic Pseudo-obstruction  
Epidemiology, Neural Control of Small Intestinal and Colonic Motility, Chronic Intestinal Pseudo-obstruction, Acute Colonic Pseudo-obstruction, Colonic Pseudo-obstruction and Megacolon, Chronic Colonic Pseudo-obstruction
  - Small Intestinal Neoplasms  
Epidemiology, Pathology, Etiology and Risk Factors, Diagnosis, Treatment
  - Colonic Polyps and Polyposis Syndromes  
Colonic Polyps, Gastrointestinal Polyposis Syndromes
  - Malignant Neoplasms of the Large Intestine  
Epidemiology of Colorectal Cancer, Etiology and Clues about Causation, of Colorectal Cancer, Familial Colon Cancer, Predisposing Factors for Colorectal Cancer, Pathology, Natural History, and Staging, Prognosis, Clinical Manifestation, Diagnosis and Screening, Treatment, Other malignant Colonic Tumors
  - Other Disease of Colon and Rectum  
Lymphocytic and Collagenous Colitis, Diversion Colitis, Nonspecific Colonic Ulcers, Dieulafoy's-Type Colonic Ulceration, Cathartic Colon, Pseudomelanosis Coli, Chemical Colitis, Pneumatosis Coli, Malakoplakia, Colitis Cystica Profunda, Neutropenic Enterocolitis, Endometriosis
  - Disease of the Anorectum  
Anatomy, Examination of the Anus and rectum, Hemorrhoids, Anal Fissure, Abscesses and Fistulas, Special Fistulas, Anal Warts, Pruritus Ani, Anal Stenosis, Unexplained Anal pain, Hidradenitis Suppurativa, Pilonidal Disease, Rectal Foreign Body
- ❖ Psychosocial factors
  - A Biopsychosocial Understanding of Gastrointestinal Illness and Disease Case Study: A Typical Patient in a Gastroenterology Practice, The Biomedical Model, The Biopsychosocial Model
  - Palliative Medicine in Patient with Advanced Gastrointestinal and hepatic Disease Definitions, Common Themes in Palliative Medicine
  - Complementary and Alternative Medicine Therapies in gastrointestinal and Hepatic Disease Definition and Epidemiology, Types of Therapies, Demography, Rationale for use, Gastrointestinal Disorders Addressed by CAM Therapies
- ❖ Topics involving multiple organs
  - Oral Disease and Oral-Cutaneous Manifestations of Gastrointestinal and Liver Disease Disorders of Mouth and Tongue, Mucocutaneous Candidiasis, Mucocutaneous Features of HIV Infection, Mucocutaneous Ulcerative Disease, Vesiculobullous Diseases, Lichen Planus, Cutaneous Manifestations of Intestinal Disease, Vascular and Connective Tissue Disorders, Cutaneous

- Manifestations of Gastrointestinal Malignancies, Cutaneous Manifestations of Liver Disease, Parasitic Diseases of the Intestine and Skin, Dermatitis Herpetiformis and Celiac Sprue, Vitamin Deficiencies
- Diverticula of the Pharynx, Esophagus, Stomach, and Small Intestine Zenker's Diverticulum, Esophageal Diverticula, Esophageal Intramural Pseudodiverticula, Gastric Diverticula, Duodenal Diverticula, Jejunal Diverticula
  - Abdominal Hernias and Gastric Volvulus Diaphragmatic Hernias, Gastric Volvulus, Inguinal and Femoral Hernias (Groin Hernias), Other Ventral Hernias, Pelvic and Perineal Hernias, Lumbar Hernias, Internal Hernias
  - Foreign Bodies and Bezoars Foreign Bodies, Bezoars
  - Caustic Injury to the Upper Gastrointestinal Tract Caustic Agents, Button (Disk) Battery Ingestion
  - Abdominal Abscesses and Gastrointestinal Fistulas Abdominal Abscesses, Gastrointestinal Fistulas
  - Eosinophilic Disorders of the Gastrointestinal Tract Eosinophil: Role in Health and Disease, Clinical Entities, Evaluation, Differential Diagnosis, Management
  - Protein-Losing Gastroenteropathy Definition and Normal Physiology, Pathophysiology, Clinical Manifestations, Disease Associated with Protein-Losing Gastroenteropathy, Diagnosis, Treatment and Prognosis
  - Gastrointestinal Lymphomas: Background, General Principles of Lymphoma Management, Gastric Lymphomas, Small Intestinal Lymphomas, Other Sites, Immunodeficiency-Related Lymphomas
  - Gastrointestinal Stromal Tumors Incidence, Location, Clinical Presentation, Pathology and Molecular Pathobiology, Diagnosis, Treatment, Special Considerations
  - Gastrointestinal Carcinoid Tumors and the Carcinoid Syndrome Clinical Presentation, Pathology, Classification, The Carcinoid Syndrome, Metastatic Carcinoid Tumors
  - Endocrine Tumors of the Pancreas and Gastrointestinal Tract General Aspects, Multiple Endocrine Neoplasia, Other Inherited Syndromes, Insulinomas, Gastrinomas, Glucagonomas, VIPomas, Somatostatinomas, GRFomas, PPomas/Nonfunctioning Pancreatic Endocrine Tumors (PETs), Other PETs, Tumor Localization, Management of Metastatic PETs
  - Gastrointestinal Consequences of Infection with Human Immunodeficiency Virus Diarrhea, Odynophagia and Dysphagia, Abdominal Pain, Anorectal Disease, Gastrointestinal Bleeding, Hepatomegaly and Abnormal Liver Tests
  - Gastrointestinal and Hepatic Complications of Solid Organ and Hematopoietic Cell Transplantation Complications of Solid Organ Transplantation, Complications of Hematopoietic Cell Transplantation
  - Gastrointestinal and Hepatic Manifestations of Systemic Disease Rheumatologic and Collagen Vascular Diseases, Oncologic and Hematologic Disease, Endocrine Diseases, Disorders of Lipid Metabolism, Renal Disease, Neurologic Diseases, Pulmonary Disease and Problem in Patients Who Require Critical Care, Cardiovascular Diseases, Infiltrative Diseases, Nodular Disorders of the Liver
  - Vascular Lesions of the Gastrointestinal Tract Vascular Lesions, Abdominal Aortic Aneurysm, Mycotic Aneurysms, Paraprostatic Enteric and Aortoenteric Fistula, Superior Mesenteric Artery Syndrome, Celiac Axis Compression Syndrome
  - Surgical Peritonitis and Other Diseases of the Peritoneum, Mesentery, Omentum, and Diaphragm
  - Anatomy and Physiology, Surgical Peritonitis, Peritonitis of Other Causes, Peritoneal Tumors, Diseases of the Mesentery and Omentum, Diseases of the Diaphragm, Laparoscopy in the Evaluation of Peritoneal Disease

- Gastrointestinal and Hepatic Disorders in the Pregnant Patient Gastrointestinal and Hepatic Function in Normal Pregnancy, Gastrointestinal Disorders and Pregnancy, Hepatic Disorders Unique to Pregnancy, Common Liver Diseases and Pregnancy
- Radiation Injury to the Gastrointestinal Tract Radiation Physics, Biological Effects of Radiation, Mechanisms of Radiation-Induced Damage to the Gastrointestinal Mucosa, Radiation-Induced Esophagitis, Radiation- Induced Gastritis, Radiation – Induced Enteritis, Management and Prevention of Radiation-Induced Gastrointestinal Tract Injury
- Complications of Gastrointestinal Endoscopy Complications of Sedation, Infectious Complications, Bleeding Complications, Other General Complications, Timing and Severity of Complication, Medicolegal Complications, Complications of Upper Endoscopy, Complications of Colonoscopy and Sigmoidoscopy, Complications of ERCP, Complications of Endoscopic Ultrasonography
- ❖ Recent advances
  - Recent advances in Gastroenterology
  - Recent advances in Hepatology
  - Recent advances in Endoscopy

### 3.2. Practical

- ❖ History, examination and writing of records:
  - History taking should include the back ground information, presenting complaints and history of present illness, history of previous illness, family history, social and occupational history and treatment history.
  - **Detailed** physical examination should include general examination and systemic examination (Chest, Cardio-vascular system, Abdomen, Central nervous system, locomotor system and joints), with detailed examination of the abdomen.
  - Skills in writing up notes, maintaining problem oriented records, progress notes, and presentation of cases during ward rounds, planning investigations and making a treatment plan should be taught.
- ❖ Bedside procedures & Investigations:
  - Therapeutic skills: Venepuncture and establishment of vascular access, Administration of fluids, blood, blood components and parenteral nutrition, Nasogastric feeding, Urethral catheterization, Administration of oxygen, Cardiopulmonary resuscitation, Endotracheal intubation.
- ❖ Upper GI Endoscopic, Colonoscopic and ERCP Procedures:
  - Endoscopic Ultrasound, Motility Study, Double Balloon Enteroscopy etc

### 3.3. Clinical Teaching

Residents should have the practical knowledge and clinical skills to evaluate and manage the various medical and gastrointestinal disorders. Clinical work should be closely guided and supervised by Consultants. If a particular clinical teaching material is not available in the institution, then the resident should be posted in another institution for acquiring the practical knowledge and skills.

- ❖ Gastroenterology Teaching Clinical
  - OPD: A Resident should work up common cases and discuss with the consultant.
  - WARD: A Resident should gain competency in diagnostic case work up and day to day management of the following cases:  
Acute viral hepatitis and its complications, chronic hepatitis, cirrhosis of liver and its complications, management of hepatic encephalopathy, upper and lower gastrointestinal bleed (assessment/monitoring/indications for transfusion), acute abdomen (peritonitis, intestinal obstruction, pancreatitis etc), liver abscess, inflammatory bowel disease, malabsorption, intestinal tuberculosis and

its complications, malignant lesions of liver, gall bladder, stomach, pancreas and intestines etc.

#### Investigations

The Resident should have acquired the theoretical/practical knowledge about following investigations:

- ❖ Interpretation of plain X-ray of the abdomen, barium swallow, barium meal, barium enema, abdominal ultrasound and CT scan of the abdomen.
- ❖ Pattern of liver biopsy in common diseases (e.g. chronic hepatitis, cirrhosis of the liver etc.).
- ❖ Indication for upper GI Endoscopy, Sigmoidoscopy, Colonoscopy, Endoscopic Sclerotherapy and Banding, Enteroscopy.
- ❖ ERCP and MRCP- indications and interpretations.
- ❖ Capsule Endoscopy- indications and interpretations.
- ❖ GI Motility studies- indications and interpretations.
- ❖ Fibroscan- indications and interpretations.
- ❖ Endoscopic Ultrasound- indications and interpretations.

#### Procedures

The Resident should have acquired practical knowledge of/and should be able to carry out the following:

- ❖ Per rectal examination and proctoscopy.
- ❖ Nasogastric intubation.
- ❖ Ascitic tap.
- ❖ Liver biopsy.
- ❖ FNAC of abdominal masses (under ultrasound guidance).
- ❖ Needle aspiration from liver abscess (under ultrasound guidance).
- ❖ Upper GI Endoscopy
- ❖ Sigmoidoscopy
- ❖ Colonoscopy
- ❖ Side viewing Endoscopy

#### MINIMUM PROCEDURES TO BE CARRIED OUT BY A GASTROENTEROLOGY RESIDENT

Procedure	Performance Criteria	Number of Procedures
<b>Esophago-gastro-duodenoscopy (EGD)</b>	Esophageal intubation Pyloric intubation	300
<b>Colonoscopy</b>	Navigation through sigmoid colon Intubation of splenic flexure Intubation of the hepatic flexure Intubation of cecum Retroflexion in the rectum	100
<b>Sigmoidoscopy</b>	Navigation Through the sigmoid colon Visualization of the splenic flexure Retroflexion in the rectum	100
<b>Endoscopic retrograde Cholangiopancreatography (ERCP)</b>	Duodenal Intubation Visualization of Papilla	20

## 4. Teaching Program

### 4.1 General Principles

Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skills oriented.

Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

### 4.2 Teaching Sessions

The teaching methodology consists of bedside discussions, ward rounds, case presentations, clinical grand rounds, statistical meetings, journal club, lectures and seminars. Along with these activities, trainees should take part in inter-departmental meetings i.e. clinico-pathological and clinico-radiological meetings that are organized regularly.

Trainees are expected to be fully conversant with the use of computers and be able to use databases like the Medline, Pubmed etc.

They should be familiar with concept of evidence based medicine and the use of guidelines available for managing various diseases.

### 4.3 Teaching Schedule

Following is the suggested weekly teaching programme in the Department of Gastroenterology:

Sr. No.	Description	Frequency
1.	Case Presentation & Discussion	Once a week
2.	Seminar	Once in two weeks
3.	Journal Club	Once in two weeks
4.	Grand Round presentations	Once a month
5.	Emergency case discussions	Once a week
6.	Statistical & Mortality Meet	Once a month
7.	Clinico-Pathological meet	Once a month
8.	Clinico-Radiological meet	Once a month
9.	Clinico-Surgical meet	Once a month
10.	Faculty lecture teaching	Once a month

- ❖ Each unit should have regular teaching rounds for residents posted in that unit. The rounds should include bedside case discussions, file rounds (documentation of case history and examination, progress notes, round discussions, investigations and management plan), interesting and difficult case unit discussions.
- ❖ Central hospital teaching sessions will be conducted regularly and DM residents would present interesting cases, seminars and take part in clinico-pathological case discussions.

### 4.4 Conferences and Papers

- ❖ A resident must attend at least one conference per year.
- ❖ One paper must be presented in at least 3 years.

## 5. Schedule of Posting

The residents should be posted in the gastroenterology ward, emergency (casualty) and gastroenterology intensive care unit during the three year course. They should also undergo rotation in allied specialties. The following should be the training program in the department:

- |                              |            |
|------------------------------|------------|
| 1. Gastroenterology Ward     | - 2 years  |
| 2. Endoscopy Lab             | - 4 months |
| 3. Gastroenterology ICU      | - 3 months |
| 4. Emergency Ward            | - 3 months |
| 5. Gastro-intestinal Surgery | - 15 days  |
| 6. Pathology                 | - 15 days  |
| 7. Microbiology              | - 15 days  |
| 8. Radiology                 | - 15 days  |

### ❖ Log Book:

All the work done during the course will be recorded by the candidate in the logbook duly signed by the consultant.

## 6. Research Project:

- ❖ Every candidate shall carry out work on an assigned research project under the guidance of a recognized postgraduate teacher, the project shall be written and submitted in the form of a Project.
- ❖ Every candidate shall submit project plan to university within time frame set by university
- ❖ Thesis shall be submitted to the University within 9 months of joining the course.
- ❖ The student will (i) identify a relevant research problem, (ii) conduct a critical review of literature, (iii) formulate a hypothesis, (iv) determine the most suitable study design, (v) state the objectives of the study, (vi) prepare a study protocol, (vii) undertake a study according to the protocol, (viii) analyze and interpret research data, and draw conclusion, (ix) write a research paper.

## 7. Assessment

All the PG residents are assessed daily for their academic activities and also periodically.

### 7.1. General Principles

- ❖ The assessment is valid, objective and reliable
- ❖ It covers cognitive, psychomotor and affective domains.
- ❖ Formative, continuing and summative (final) assessment is also conducted in theory as well as practical. In addition, research project is also assessed separately.

### 7.2. Formative Assessment

- ❖ The formative assessment is continuous as well as end of term.
- ❖ The former is based on the feedback from the consultants concerned.
- ❖ Formative assessment will provide feedback to the candidate about his/her performance and help to improve in the areas they lack.
- ❖ Record of internal assessment should be presented to the board of examiners for consideration at the time of final examination.

### 7.3. Internal Assessment



The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No.	Items	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of term theory examination	20
5.	End of term practical examination	20

#### 7.3.1 Personal attributes:

- ❖ **Behavior and Emotional Stability:** Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- ❖ **Motivation and Initiative:** Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.
- ❖ **Honesty and Integrity:** Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.
- ❖ **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

#### 7.3.2 Clinical Work:

- ❖ **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- ❖ **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- ❖ **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- ❖ **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

**7.3.3 Academic Activity:** Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

**7.3.4 End of term theory examination** conducted at end of 1<sup>st</sup>, 2<sup>nd</sup> year and after 2 years 9 months

**7.3.5 End of term practical/oral examinations** after 2 years 9 months.

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by the all consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

#### 7.4. Summative Assessment

- ❖ Ratio of marks in theory and practical will be equal.
- ❖ The pass percentage will be 50%.
- ❖ Candidate will have to pass theory and practical examinations separately.

#### A. Theory examination

Paper	Title	Marks
Paper -I	Basic Sciences as related to Gastroenterology	100
Paper-II	Clinical Gastroenterology	100
Paper-III	Investigative Gastroenterology	100
Paper-IV	Recent advances in Gastroenterology	100
Total		400

#### B. Practical & Viva-Voce Examination

S. No		Marks
1.	Long Case (1)	100
2.	Short Cases (2) 75 marks each	150
3.	Procedure	50
4.	Grand Viva including Instruments/Radiology/Pathology	100
Total		400

#### 8. Job Responsibilities

##### Outdoor Patient (OPD) Responsibilities

- The working of the residents in the OPD should be fully supervised.
- They should evaluate each patient and write the observations on the OPD card with date and signature.
- Investigations should be ordered as and when necessary using prescribed forms.
- Residents should discuss all the cases with the consultant and formulate a management plan.
- Patient requiring admission according to resident's assessment should be shown to the consultant on duty.
- Patient requiring immediate medical attention should be sent to the casualty services with details of the clinical problem clearly written on the card.
- Patient should be clearly explained as to the nature of the illness, the treatment advice and the

investigations to be done.

- Resident should specify the date and time when the patient has to return for follow up.

#### ❖ In-Patient Responsibilities

- Each resident should be responsible and accountable for all the patients admitted under his care. The following are the general guidelines for the functioning of the residents in the ward;
- Detailed work up of the case and case sheet maintenance;
- He/She should record a proper history and document the various symptoms. Perform a proper patient examination using standard methodology. He should develop skills to ensure patient comfort/consent for examination. Based on the above evaluation he/she should be able to formulate a differential diagnosis and prepare a management plan.
- Should develop skills for recording of medical notes, investigations and be able to properly document the consultant round notes.
- To organize his/her investigations and ensure collection of reports.
- Bedside procedures for therapeutic or diagnostic purpose.
- Presentation of a precise and comprehensive overview of the patient in clinical rounds to facilitate discussion with senior residents and consultants.
- To evaluate the patient twice daily (and more frequently if necessary) and maintain a progress report in the case file.
- To establish rapport with the patient for communication regarding the nature of illness and further plan management.
- To write instructions about patient's treatment clearly in the instruction book along with time, date and the bed number with legible signature of the resident.
- All treatment alterations should be done by the residents with the advice of the concerned consultants and senior residents of the unit.

#### ❖ Admission day

Following guidelines should be observed by the resident during admission day.

- Resident should work up the patient in detail and be ready with the preliminary necessary investigations reports for the evening discussion with the consultant on duty.
- After the evening round the resident should make changes in the treatment and plan out the investigations for the next day in advance.

#### ❖ Doctor on Duty

- Duty days for each Resident should be allotted according to the duty roster.
- The resident on duty for the day should know about all sick patients in the wards and relevant problems of all other patients, so that he could face an emergency situation effectively.
- In the morning, detailed over (written and verbal) should be given to the next resident on duty. This practice should be rigidly observed.
- If a patient is critically ill, discussion about management should be done with the consultant at any time.
- The doctor on duty should be available in the ward through out the duty hours.

#### ❖ Care of Sick Patients

- Care of sick patients in the ward should have precedence over all other routine work for the doctor on duty.
- Patients in critical condition should be meticulously monitored and records maintained.
- If patient merits ICU care then it must be discussed with the senior residents and consultants for transfer to ICU.

- ❖ Resuscitation skills
  - At the time of joining the residency programme, the resuscitation skills should be demonstrated to the residents and practical training provided at various work stations.
  - Residents should be fully competent in providing basic and advanced cardiac life support.
  - They should be fully aware of all advanced cardiac support algorithms and be aware of the use of common resuscitative drugs and equipment like defibrillators and external cardiac pacemakers.
  - The resident should be able to lead a cardiac arrest management team.
  
- ❖ Discharge of the Patient
  - Patient should be informed about his/her discharge one day in advance and discharge cards should be prepared 1 day prior to the planned discharge.
  - The discharge card should include the salient points in history and examination, complete diagnosis, important management decisions, hospital course and procedures done during hospital stay and the final advice to the patient.
  - Consultants and DM Residents should check the particulars of the discharge card and counter sign it.
  - Patient should be briefed regarding the date, time and location of OPD for the follow up visit.
  
- ❖ In Case of Death
  - In case it is anticipated that a particular patient is in a serious condition, relatives should be informed about the critical condition of the patient beforehand.
  - Residents should be expected to develop appropriate skills for breaking bad news and bereavements.

Follow up death summary should be written in the file and face sheet notes must be filled up and the sister in charge should be requested to send the body to the mortuary with respect and dignity from where the patient's relatives can be handed over the body.
  - In case of a medico legal case, death certificate has to be prepared in triplicate and the body handed over to the mortuary and the local police authorities should be informed.
  - Autopsy should be attempted for all patients who have died in the hospital especially if the patient died of an undiagnosed illness.
  
- ❖ Bedside Procedures
  - The following guidelines should be observed strictly:
  - Be aware of the indications and contraindications for the procedure and record it in the case sheet. Rule out contraindications like low platelet count, prolonged prothrombin time, etc.
  - Plan the procedure during routine working hours, unless it is an emergency. Explain the procedure with its complications to the patient and his/her relative and obtain written informed consent on a proper form. Perform the procedure under strict aseptic precautions using standard techniques. Emergency tray should be ready during the procedure.
  - Make a brief note on the case sheet with the date, time, nature of the procedure and immediate complications, if any.
  - Monitor the patient and watch for complications(s).
  
- ❖ Medico-Legal Responsibilities of the Residents
  - All the residents are given education regarding medico-legal responsibilities at the time of admission in a short workshop.
  - They must be aware of the formalities and steps involved in making the correct death certificates, mortuary slips, medico-legal entries, requisition for autopsy etc.
  - They should be fully aware of the ethical angle of their responsibilities and should learn how to take

legally valid consent for different hospital procedures & therapies.

- They should ensure confidentiality at every stage.

## 9. Suggested Books and Journals

### 9.1 Textbooks

1. Gastrointestinal and Liver Disease- Sleisenger & Fordtran
2. Diseases of the Liver - Eugene R. Schiff
3. Diseases of the Liver & Biliary System- Sheila Sherlock
4. Yamada textbook of Gastroenterology-YAMADA
5. Sivag's textbook of GI Endoscopy- SIVAG
6. Gastro-intestinal Endoscopy- P. Cotton

### 9.2 Journals

1. Gastroenterology
2. Hepatology
3. GUT
4. Journal of Hepatology
5. American Journal of Gastroenterology
6. Gastrointestinal Endoscopy
7. Seminars in Liver disease.
8. Indian Journal of Gastroenterology
9. New England Journal of Medicine
10. Lancet
11. Tropical Gastroenterology

### 9.3 Clinics

1. Gastroenterology Clinics of North America
2. Clinics in Liver disease
3. Gastrointestinal Endoscopy Clinics of North America.

## 10. Model Question Paper



# Model Test Paper

## DM Gastroenterology Paper-I Basic Sciences as Related to Gastroenterology

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**Maximum Marks : 100**

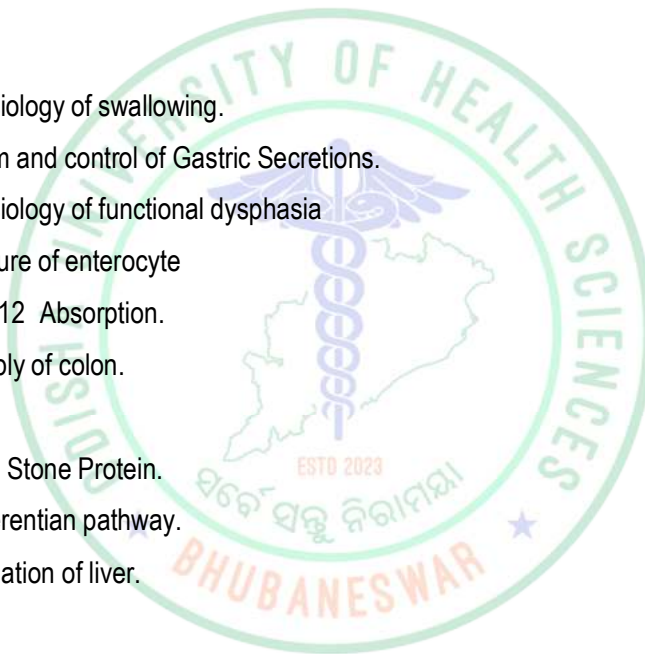
**Time : 3 Hours**

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- Attempt **ALL** questions.
  - Answer each question and its parts in **SEQUENTIAL ORDER**.
  - **ALL questions carry equal marks.**
  - Illustrate your answer with **SUITABLE DIAGRAMS**.
- 

Write a short note on:

1. Pathophysiology of swallowing.
2. Mechanism and control of Gastric Secretions.
3. Pathophysiology of functional dysphasia
4. Ultrastructure of enterocyte
5. Vitamin B12 Absorption.
6. Blood supply of colon.
7. Giardia
8. Pancreatic Stone Protein.
9. T Cell differentiation pathway.
10. Microcirculation of liver.



# Model Test Paper

## DM Gastroenterology Paper-II Clinical Gastroenterology

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**Maximum Marks : 100**

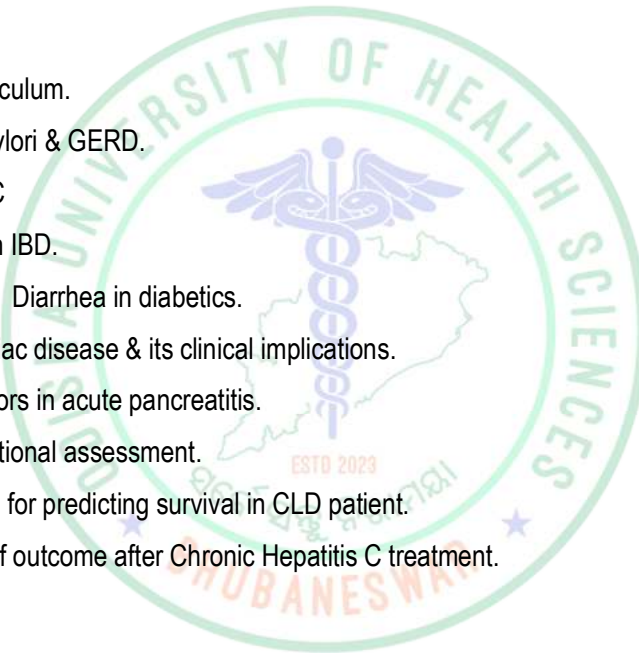
**Time : 3 Hours**

---

- Attempt **ALL** questions.
  - Answer each question and its parts in **SEQUENTIAL ORDER**.
  - *ALL questions carry equal marks.*
  - Illustrate your answer with **SUITABLE DIAGRAMS**.
- 

Write a short note on:

1. Zenkers Diverticulum.
2. Helicobacter Pylori & GERD.
3. Genetic of CRC
4. Osteoporosis in IBD.
5. Pathogenesis of Diarrhea in diabetics.
6. Genetics of celiac disease & its clinical implications.
7. Prognostic factors in acute pancreatitis.
8. How to do nutritional assessment.
9. Scoring system for predicting survival in CLD patient.
10. Determinants of outcome after Chronic Hepatitis C treatment.



# Model Test Paper

## DM Gastroenterology Paper-III Investigative Gastroenterology

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**Maximum Marks : 100**

**Time : 3 Hours**

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- Attempt **ALL** questions.
  - Answer each question and its parts in **SEQUENTIAL ORDER**.
  - *ALL questions carry equal marks.*
  - Illustrate your answer with **SUITABLE DIAGRAMS**.
- 

Write a short note on:

1. Diagnosis & management of cardiac achlasia.
2. Gastric Outlet Obstruction- Diagnosis & management.
3. GIST- Diagnosis & Management.
4. Evaluation of a patient with Fulminant colitis.
5. Evaluation of a patient with chronic GI blood loss.
6. Refractory Celiac Disease- Diagnosis & management.
7. Evaluation of a case with recurrent Pancreatitis.
8. Evaluation and Management of Chronic Hepatitis B.
9. Evaluation of non-responders to standard therapy for CHC.
10. Evaluation and Management of Renal failure in cirrhosis.



# Model Test Paper

## DM Gastroenterology

### Paper-IV

#### Recent advances in Gastroenterology

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**Maximum Marks : 100**

**Time : 3 Hours**

---

- Attempt **ALL** questions.
  - Answer each question and its parts in **SEQUENTIAL ORDER**.
  - **ALL** questions carry equal marks.
  - Illustrate your answer with **SUITABLE DIAGRAMS**.
- 

Write a short note on:

1. Capsule PH monitoring of the Esophagus
2. Narrow Band Imaging for surveillance of GI tumors
3. Directly acting agents against HCV
4. New therapies for advanced HCC
5. MRI for pancreatic disorders
6. Ano-rectal Manometry
7. Interventional EUS
8. NOTES
9. Micro RNAs
10. Proteomics

